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For information, contact:
Peter H. Kuck, Nickel Commodity Specialist
989 National Center
Reston, VA 20192
Telephone: (703) 648-4965, Fax: (703) 648-7757
E-mail: pkuck@usgs.gov

Barbara J. McNair
Telephone: (703) 648-7952

MINES FaxBack: (703) 648-4999
Internet: http://minerals.er.usgs.gov/minerals

NICKEL IN JANUARY 1998

Reported domestic nickel consumption in January, on a daily average basis, was slightly less than that of December 1997, according to the U.S. Geological Survey. Daily usage by the stainless steel industry was up 3% from the December average of 104 metric tons (t). Consumption of nickel to make alloy steels also grew and was up 24%. However, these increases were offset by a 6% decrease in consumption of elemental nickel to make nickel-base corrosion resistant alloys. Sales to plating companies averaged 39 t per day, 5% less than the 41 t for December. Percentages reported in this paragraph may not be verifiable owing to concealment of company proprietary data.

On January 31, U.S. consumer stocks of cathode, briquets, and powder totaled 5,410 t and were down 16% from the 6,420 t at the end of 1997. Stocks in London Metal Exchange warehouses declined slightly to 65,784 t and were down 2% from the 2-year high of 67,056 t reached on November 13. At yearend 1997, world nickel producers (excluding those in China, the former Yugoslavia, and the Ural area of Russia) had 91,200 t of Ni in primary products on hand to meet demand (International Nickel Study Group, 1998). World producer stocks have declined 22% since June 1996.

The United States imported 147,000 t of primary nickel in 1997, about 4% more than the tonnage for 1996. About 87% of the material was in some form of the pure metal (i.e., cathode, pellets, briquets, powder, etc.) Trade data for January 1998 will appear in a subsequent issue.

Falconbridge's Raglan Mine starts up ahead of schedule

On December 10, Falconbridge Limited began producing nickel-copper-cobalt concentrates at its new Raglan Mine. Startup was 3 months earlier than originally planned. The green field mining and milling complex is at the tip of the Ungava Peninsula in northern Quebec. The site is near Katinniq, a village in the Monts de Povungnituk area, 60 kilometers west of Kangiqsujuaq and 100 kilometers southeast of Salluit. To date, Falconbridge has spent more than C$500 million on development and construction. Over 150 people now live at the remote site. Falconbridge also has tried to maximize involvement of the local Inuit people in the project. The company has been working closely with local communities, their overseeing Makivik Corporation, and the Kativik Regional Government to resolve potential environmental and economic development issues as they arise. Part of the profits from Raglan will go into a trust fund for the Inuit (Falconbridge Limited, 1997b).

Raglan is expected to be fully operational by mid-1998 and will increase the company's production of nickel in sulfide concentrates by almost 50%. Ore will come from several open pits and an underground mine at Katinniq. The mill was assembled onsite from 12 prefabricated modules, each weighing up to 1,200 t (Falconbridge Limited, 1997c). The modules were constructed at the Port of Quebec, shipped by barge to Deception Bay on the Hudson Strait, and then hauled on special transporters 95 kilometers to Katinniq. The mill can process 2,400 t of pentlandite-chalcopyrite ore per day. By the end of 1998, the complex should be able to produce 130,000 t per year of concentrates typically grading 16% nickel and 4% copper. This capacity figure equates to 20,800 t of nickel, 5,200 t of copper, and 200 t of cobalt (Falconbridge Limited, 1997b). The concentrates also contain economically recoverable amounts of platinum-group metals.

The concentrates will be trucked to Deception Bay and then shipped by vessel to Quebec City. From Quebec City, the concentrates will be railed to Falconbridge's smelter at Sudbury, Ontario, for conversion into matte. The matte will then be railed back to Quebec City and shipped to Falconbridge's Nikkelverk refinery in Norway where the metals will be separated from one another.

According to company officials, the Raglan Mine has 14.4 million t of proven and probable reserves, averaging 3.17% nickel and 0.88% copper (Falconbridge Limited, 1997a). The mine has an additional 6.1 million t of possible reserves averaging 2.97% nickel and 0.88% copper. All of the ores occur in the northeastern half of the Proterozoic Cape Smith Fold Belt. The fold belt extends across the entire width of the Ungava Peninsula, from Cape Smith on Hudson Bay to Kangiqsujuaq (Picard et al., 1990). The fold belt was apparently part of a Precambrian rift system that first accumulated continental shelf sediments and continental flood basalts, and later oceanic basalts. Andesites, pillow lavas, and volcanic breccias are also common. The northern half of the fold belt appears to be a vast

ophiolitic complex. The entire belt is permeated by southwest-northeast trending dikes of diabase, gabbro, and peridotite.

Geologists have identified more than 15 nickel-copper deposits in the northeastern part of the Cape Smith Fold Belt. The pentlandite-chalcopyrite-pyrrhotite ore bodies are associated with basaltic sills and flows and are thought to have segregated from the magnesium-rich, ultramafic magma during cooling (Barnes et al., 1992). If market conditions improve, Falconbridge could expand production to 30,000 or 40,000 t per year of nickel with a minimal capital investment. Falconbridge's holdings extend along a 55-kilometer east-west strip in the Cross Lake-Katinniq-Raglan-Donaldson area and include several ore bodies that have not been fully explored.

At the present time, there is considerable exploration activity south of the Raglan property. In May 1997, Canadian States Resources Inc. entered into an agreement with Ungava Minerals Corp. to drill a promising nickel-copper deposit located 12 kilometers south of the Raglan property. In August, High North Resources Inc. began drilling for massive sulfides in the Expo Ungava Zone. This second drilling program is also being conducted under an option from Ungava Minerals. High North is hoping to intersect massive sulfide bodies associated with peridotite intrusions (High North Resources Inc., 1997). The Expo Ungava area was drilled by AMAX Inc. during the 1970's. AMAX reported finding 4.2 million t of resources grading 0.75% nickel and 0.85% copper that could be exploited by open pit mining with a waste to ore ratio of 2.75:1 (Canadian States Resources, Inc., 1997).

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TABLE 1
CONSUMPTION OF NICKEL (EXCLUSIVE OF SCRAP), BY FORM AND USE 1/

(Metric tons, nickel content)

Period	Cathodes, pellets, briquets, and powder	Ferronickel	Oxide-sinter, salts, and other forms	Total	Total year to date
1997:					
January	7,140	2,000	109 r/	9,250 r/	9,250 r/
February	6,190 r/	1,510	137 r/	7,840 r/	17,100
March	5,970	1,580	262 r/	7,820 r/	24,900
April	6,840 r/	1,490	577 r/	8,910 r/	33,800 r/
May	6,840 r/	1,300	412 r/	8,550 r/	42,400 r/
June	6,890 r/	1,280	462 r/	8,630 r/	51,000 r/
July	6,840 r/	1,640	301 r/	8,780 r/	59,800 r/
August	6,390 r/	1,460	175 r/	8,020 r/	67,800 r/
September	5,890 r/	1,470	307 r/	7,670 r/	75,500 r/
October	6,570 r/	1,540	332 r/	8,450	83,900 r/
November	6,180	1,370	244 r/	7,790 r/	91,700 r/
December	6,960 r/	1,330	380 r/	8,660 r/	100,000 r/
January-December	78,700	18,000	3,700	100,000	XX
1998:					
January:					
Steel:					
Stainless and heat resisting	1,910	1,290	W	3,190	3,190
Alloy (excludes stainless)	574	W	W	574	574
Superalloys	1,180	--	W	1,180	1,180
Copper-nickel alloys	W	W	W	W	W
Electrical, magnetic, and expansion alloys	34	--	--	34	34
Other nickel & nickel alloys	1,310	W	W	1,310	1,310
Cast iron	--	--	--	--	--
Electroplating (sales to platers)	1,200	--	W	1,200	1,200
Chemical and chemical uses	--	--	W	W	W
Other uses	466	129	424	1,020	1,020
Total reported	6,670 2/	1,410	424	8,510	8,510
Total all companies (calc) 3/	XX	XX	XX	12,800	12,800
1998: January	6,670	1,410	424	8,510	XX
1997: January	7,140	2,000	109 r/	9,250 r/	XX

r/ Revised. W Withheld to avoid disclosing company proprietary data; included in "Other uses" category. XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Of consumption, 5,590 metric tons were consumed as cathodes and pellets, the remainder as briquets and powder.

3/ Figures represent calculated apparent consumption; based on the revised proportion of reported primary consumption (66.21%) to apparent primary consumption for 1996.

TABLE 2
ENDING STOCKS OF NICKEL (EXCLUSIVE OF SCRAP) HELD BY CONSUMERS,
BY FORM AND USE 1/ 2/

(Metric tons, nickel content)

Period	Cathodes, pellets, briquets, and powder	Ferronickel	Oxide-sinter, salts, and other forms	Total
1997:				
January	4,510 r/	659	72 r/	5,240 r/
February	4,110 r/	231	196 r/	4,540 r/
March	4,150 r/	240	620 r/	5,010 r/
April	3,900 r/	366	649 r/	4,910 r/
May	3,370 r/	344	592 r/	4,300 r/
June	4,000 r/	389	307 r/	4,690 r/
July	4,750 r/	401	139 r/	5,290 r/
August	5,220 r/	304	169 r/	5,690 r/
September	6,130 r/	447	220 r/	6,800 r/
October	5,290	271	145 r/	5,710 r/
November	4,210 r/	190	154 r/	4,550 r/
December	6,420 r/	1,340	375 r/	8,130 r/
1998:				
January:				
Steel (stainless, heat resisting and alloy)	3,670	952	(3/)	4,630
Nonferrous alloys 4/	1,500	--	(3/)	1,500
Foundry (cast irons)	(3/)	--	(3/)	(3/)
Chemical (catalysts, ceramics, plating salts, etc.) and unspecified uses	239	--	236	475
Total	5,410	952	236	6,600

r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Stocks held by companies that consume nickel in more than one end use category are credited to the major category. Stocks are subject to revisions owing to inventory adjustment.

3/ Included in "Chemical and unspecified uses" category.

4/ Includes superalloys, nickel-copper and copper-nickel alloys, permanent magnet alloys, and other nickel alloys.

TABLE 3
CONSUMPTION AND ENDING STOCKS OF PURCHASED SECONDARY NICKEL, BY USE 1/

(Metric tons, nickel content)

	Consumption			Stocks		
Period	Ferrous scrap 2/	Nonferrous scrap 3/	Total scrap	Ferrous scrap 2/	Nonferrous scrap 3/	Total scrap
1997:						
January	4,800	847	5,650	3,160	116	3,280
February	3,880	806	4,690	3,290	115	3,410
March	4,250	1,010	5,260	4,090	106	4,190
April	5,260	791	6,060	3,820	114	3,940
May	4,750	843	5,590	3,790	115	3,900
June	4,770	757 r/	5,520	3,900	113	4,020
July	5,190	826 r/	6,020	3,380	116	3,500 r/
August	3,780	762	4,540	3,930	115	4,040
September	3,910	776	4,690	3,710	110	3,820
October	4,440	847	5,290	4,030	118	4,150
November	4,070	788 r/	4,860 r/	4,090	113	4,200
December	4,380	826 r/	5,210 r/	4,050	110 r/	4,160 r/
January-December	53,500	9,880 r/	63,400 r/	XX	XX	XX
1998:						
January	5,180	806	5,990	3,680	111	3,800

r/ Revised. XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Nickel content is calculated from an average nickel content and the reported gross weight of scrap.

3/ Combined consumption and stocks of aluminum-base, copper-base, and nickel-base scrap.

TABLE 4
U.S. IMPORTS FOR CONSUMPTION OF NICKEL, BY COUNTRY 1/

(Metric tons, nickel content 2/)

Period and country of origin	Cathodes, pellets, and briquets	Powder and flakes	Ferro-nickel	Metal-lurgical-grade oxide	Waste and scrap	Stainless steel scrap	Chemicals	Total 3/	Total year to date 4/	Wrought nickel
1996:										
December	9,180	815	969	21	351	275	251	11,900	150,000	61
January-December	113,000	9,690	16,000	463	4,270	3,790	3,270	150,000	XX	636
1997:										
January	7,640	954	1,180	111	364	263	265	10,800	10,800	57
February	9,310	945	1,180	395	696	392	242	13,200	23,900	53
March	14,500	1,130	1,070	277	544	342	198	18,100	42,000	73
April	7,920	948	1,050	347	572	433	294	11,600	53,600	78
May	13,900	838	1,420	217	370	469	297	17,500	71,100	99
June	5,240	625	1,240	49	482	511	256	8,400	79,500	40
July	8,190	520	1,280	10	643	529	271	11,400	90,900	82
August	10,800	752	956	172	334	359	230	13,600	105,000	111
September	11,100	907	1,090	90	455	378	205	14,200	119,000	84
October	8,590	966	942	21	559	403	437	11,900	131,000	71
November:	9,310 5/	999	1,090	36	595	354	240	12,600	143,000	42
December:										
Australia	1,240	160	--	5	--	--	--	1,410	13,700	--
Brazil	200	--	--	--	--	--	--	200	833	--
Canada	5,080	530	--	212	48	224	27	6,120	60,600	2
Colombia	--	--	101	--	--	--	--	101	1,440	--
Dominican Republic	--	--	798	--	--	1	--	799	8,160	--
Finland	115	79	--	--	--	--	71	265	4,920	--
France	1	--	125 5/	--	33	--	13	172	3,140	20
Germany	--	--	--	--	29	--	16	44	780	143
Japan	--	9	--	--	11	5	54	79	1,100	15
Mexico	--	--	--	--	14	129	8	152	2,380	--
New Caledonia	--	--	--	--	--	--	--	--	2,640	--
Norway	2,440	--	--	--	--	--	--	2,440	24,100	--
Russia	2,150	20	--	--	4	--	--	2,180	25,600	--
South Africa	200	--	--	--	--	--	--	200	1,140	--
United Kingdom	--	6	--	--	152	--	1	159	2,850	2
Zimbabwe	156	--	--	--	--	--	--	156	1,550	--
Other	192 5/	80	--	--	292	13	98	677	3,530	--
Total	11,800	884	1,020	217	583	372	288	15,200	158,000	182
1997: January-December	118,000	10,500	13,500	1,940	6,200	4,800	3,220	158,000	XX	973
1996: January-December	113,000	9,690	16,000	463	4,270	3,790	3,270	150,000	XX	636

XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ The nickel contents are assumed to be as follows: metallurgical-grade oxide (77%), waste and scrap (50%), and stainless steel scrap (7.5%). The chemical category includes chlorides (25%), sulfates (22%), and other salts (22%), supported catalysts (22%), and oxide, sesquioxide and hydroxide (65%).

3/ Excludes wrought nickel.

4/ May include revisions for prior months.

5/ All or part of these data have been referred to the Bureau of the Census for verification.

Source: Bureau of the Census.

TABLE 5
U.S. EXPORTS OF NICKEL, BY COUNTRY 1/

(Metric tons, nickel content 2/)

Period and country of destination	Cathodes, pellets, and briquets	Powder and flakes	Ferro-nickel	Metal-lurgical-grade oxide	Waste and scrap	Stainless steel scrap	Chemicals	Total 3/	Total year to date 4/	Wrought nickel
1996:										
December	21	75	433	393	960	1,850	551	4,280	46,800	21
January-December	586	1,060	3,330	4,210	10,900	22,800	3,940	46,800	XX	439
1997:										
January	20	72	442	513	862	1,740	455	4,100	4,100	56
February	39	114	416	134	1,000	1,690	515	3,920	8,020	89
March	26	93	616	172	1,210	1,280	488	3,880	11,900	61
April	33	84	725	148	1,480	2,740	684	5,890	17,800	158
May	29	102	913	124	1,290	1,610	439	4,510	22,300	58
June	52	97	900	172	963	3,540	258	5,990	28,300	56
July	19	55	661	165	676	2,970	428	4,970	33,300	109
August	28	63	491	103	726	3,210	676	5,300	38,600	50
September	211 5/	39	344	168	1,190	2,660	421	5,030	43,600	79
October	1 r/	54	812	103	956	2,690	312	4,930	48,500	63
November	6	110	258	104	1,160	1,660	586	3,890	52,400	75
December:										
Australia	--	--	--	--	--	--	1	1	80	(6/)
Belgium	(6/)	--	--	(6/)	--	--	2	3	549	--
Canada	--	10	--	40	649	221	58	978	12,500	4
Germany	--	2	--	--	52	--	1	56	800	(6/)
India	--	(6/)	273	--	--	8	--	281	2,510	--
Italy	--	(6/)	--	--	--	--	17	17	114	(6/)
Japan	--	6	100	149	29	91	136	510	5,670	(6/)
Korea, Republic of	--	3	--	--	--	966	1	970	8,690	--
Mexico	99	7	--	(6/)	--	18	8	132	4,750	8
Netherlands	--	--	--	1	--	--	5	6	515	--
South Africa	--	--	--	129	--	136	63	328	3,070	--
Spain	--	(6/)	--	--	--	358	--	358	4,490	--
Sweden	--	--	--	--	169	26	--	195	2,790	--
Taiwan	--	(6/)	--	--	--	59	20	79	6,800	--
United Kingdom	--	(6/)	--	1	9	29	19	58	551	8
Other	16	6	--	(6/)	--	45	102	169	2,700	18
Total	115	35	373	320	909	1,960	433	4,140	56,500	38
1997: January-December	578	919	6,950	2,230	12,400	27,700	5,700	56,500	XX	893
1996: January-December	586	1,060	3,330	4,210	10,900	22,800	3,940	46,800	XX	439

r/ Revised. XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ The nickel contents are assumed to be as follows: metallurgical-grade oxide (77%), waste and scrap (50%), and stainless steel scrap (7.5%). The chemical category includes chlorides (25%), sulfates (22%), and other salts (22%), supported catalysts (22%), and oxide, sesquioxide and hydroxide (65%).

3/ Excludes wrought nickel.

4/ May include revisions for prior months.

5/ All or part of these data have been referred to the Bureau of the Census for verification.

6/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF NICKEL ALLOYS, BY COUNTRY 1/

(Metric tons, gross weight)

Period and country of origin	Unwrought alloyed ingot	Bars, rods, and profiles	Wire	Plates and sheets	Foil	Tubes and pipes	Other alloyed articles	Total	Total year to date 2/
1996:									
December	151	178	256	145	(3/)	48	64	843	10,200
January-December	2,780	2,110	1,810	1,520	2	832	1,190	10,200	XX
1997:									
January	208	132	196	98	--	100	108	841	841
February	181	202	190	149	--	96	107	926	1,770
March	265	184	266	90	(3/)	117	52	974	2,740
April	234	186	283	139	--	298	61	1,200	3,940
May	457	148	290	190	1	103	56	1,250	5,190
June	431	190	346	150	3	133	68	1,320	6,510
July	463	224	283	247	(3/)	186	66	1,470	7,980
August	336	216	251	143	(3/)	363	36	1,350	9,320
September	266	183	232	174	1	202	93	1,150	10,500
October	346	132	318	186	(3/)	120	47	1,150	11,600
November	252	129	299	198	(3/)	182	63	1,120	12,700
December:									
Australia	85	--	--	--	--	--	--	85	1,850
Belgium	5	--	--	--	--	--	--	5	146
Canada	50	(3/)	12	--	--	5	8	76	664
France	--	16	44	57	--	(3/)	(3/)	117	1,150
Germany	1	74	45	189	--	34	5	349	3,560
Italy	--	76	--	--	--	4	(3/)	80	813
Japan	15	--	2	3	--	26	2	48	924
Mexico	--	--	1	--	--	--	1	2	8
Netherlands	--	--	(3/)	--	--	10	7	17	156
South Africa	55	--	--	--	--	--	--	55	438
Sweden	--	--	213	4	--	--	--	217	1,930
United Kingdom	77	38	1	--	--	6	1	124	1,230
Other	(3/)	23	13	--	--	(3/)	20	56	1,110
Total	289	228	331	253	--	86	44	1,230	14,000
1997: January-December	3,730	2,150	3,290	2,020	4	1,990	802	14,000	XX
1996: January-December	2,780	2,110	1,810	1,520	2	832	1,190	10,200	XX

XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ May include revisions for prior months.

3/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 7
U.S. EXPORTS OF NICKEL ALLOYS, BY COUNTRY 1/

(Metric tons, gross weight)

Period and country of destination	Unwrought alloyed ingot	Bars, rods, and profiles	Wire	Plates and sheets	Foil	Tubes and pipes	Other alloyed articles	Total 2/	Total year to date 2/
1996:									
December	478	191	119	971	9	146	129	2,050	23,500
January-December	5,710	3,210	1,560	8,000	200	1,270	3,520	23,500	XX
1997:									
January	541	320	115	838	10	91	120	2,030	2,030
February	641	222	137	554	20	136	180	1,890	3,930
March	425	334	152	845	23	99	597	2,480	6,400
April	344	225	224	649	14	90	374	1,920	8,320
May	262	290	212	810	15	81	146	1,820	10,100
June	357	319	195	781	11	131	686	2,480	12,600
July	293	193	229	525	19	114	439	1,810	14,400
August	320	246	269	699	8	131	239	1,910	16,300
September	269	280	221	714	26	103	154	1,770	18,100
October	488 r/	348	220 r/	736	21	104	195 r/	2,110	20,200
November	425	339	175	718	14	136	455 r/	2,260	22,500
December:									
Australia	(3/)	--	1	151	--	2	(3/)	154	1,440
Belgium	--	1	(3/)	3	--	(3/)	--	4	195
Canada	(3/)	22	42	42	3	40	92	240	3,360
France	189	127	2	10	--	(3/)	34	362	2,950
Germany	31	21	5	58	--	1	3	119	906
India	--	--	--	1	--	(3/)	(3/)	1	21
Ireland	14	(3/)	30	1	--	--	(3/)	46	513
Italy	9	3	3	60	--	1	(3/)	76	1,330
Japan	8	25	6	274	--	(3/)	(3/)	314	2,200
Korea, Republic of	--	--	2	49	--	6	4	61	1,190
Mexico	18	9	45	5	--	3	2	83	945
Netherlands	17	36	4	10	--	--	1	68	674
Singapore	--	3	4	22	--	(3/)	2	33	218
Spain	(3/)	(3/)	--	--	--	--	--	(3/)	75
Sweden	--	1	--	21	--	(3/)	--	22	187
Switzerland	--	2	--	3	--	1	2	8	164
Taiwan	2	2	--	72	--	(3/)	2	78	472
United Kingdom	51	110	47	121	1	1	1	332	4,530
Other	208	128	2	12	(3/)	3	280	629	3,740
Total	547	490	193	915	4	58	423	2,630	25,100
1997: January-December	4,910	3,610	2,340	8,790	185	1,270	4,010	25,100	XX
1996: January-December	5,710	3,210	1,560	8,000	200	1,270	3,520	23,500	XX

r/ Revised. XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ May include revisions for prior months.

3/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 8
NICKEL CONSUMPTION IN CAST AND WROUGHT PRODUCTS

	Percent	
	Wrought	Cast
January 1998:		
Stainless and heat resisting steels	97	3
Alloy steels	98	2
Superalloys	82	18
Copper-nickel alloys	99	1
Other nickel-base alloys	100	(1/)

1/ Less than 1/2 unit.

TABLE 9
NICKEL PRICES

Date	Cathode NY Dealer $/lb.	LME Cash $/t	LME Cash $/lb.	18/8 Stainless steel scrap Pittsburgh $/long ton(gw)
1998:				
Average for month of:				
January	2.605	5,491.750	2.491	740
February	2.542	5,386.875	2.443	685
Average for week ending:				
January 2	2.77-2.83	5,932.500	2.691	745-755
January 9	2.71-2.85	5,756.000	2.611	735-745
January 16	2.65-2.70	5,537.500	2.512	735-745
January 23	2.52-2.61	5,374.000	2.438	735-745
January 30	2.49-2.61	5,299.500	2.404	735-745
February 6	2.54-2.60	5,394.500	2.447	680-690
February 13	2.62-2.69	5,542.000	2.514	680-690
February 20	2.54-2.66	5,378.500	2.440	680-690
February 27	2.47-2.59	5,232.500	2.373	680-690

Sources: Platt's Metals Week and American Metal Market.